

POPULATION BUILD-UP OF TWO INTRODUCED
CONODERUS ELATERID SPECIES IN CALIFORNIA
(COLEOPTERA: ELATERIDAE)

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ABSTRACT

Black light catches of adults of the introduced elaterids *Conoderus exsul* Sharp and *Conoderus falli* Lane, at Riverside and Olive, California, increased markedly when the method of hand collecting adults in 1975-76 from a canvas placed below a BL was replaced by a regulation survey type BL trap. The latter trap collected a total of 12,642 *C. exsul* adults at the two locations in 1977-78. At Riverside in the same period, 4,585 *C. falli* adults were trapped. These catches indicate that both species have found food, soils, and climate favorable for survival.

The sugarcane wireworm *Conoderus exsul* (Sharp), intercepted at Alameda, California in 1937, is present in 14 counties in California. The southern potato wireworm *Conoderus falli* Lane, originally recovered in 1963 near Palm Springs, is present in 4 counties (Stone 1975, 1976 a and b).

Information on the increase in adult abundance of these species at Riverside was obtained in 1977-78 by making daily collections from a 15 W fluorescent black survey type light trap located adjacent to an open field containing sandy loam soil and which is disced at intervals to control weeds. A similar trap used at Olive, about 30 miles west of Riverside, was located in an avocado grove on a hillside where the soil was of coarse texture, not overly moist, and unfavorable for wireworm survival. Prior to the employment of the above traps, in 1976-76 *C. exsul* adults were hand collected from a canvas suspended below a 15 W BL. At Olive annual adult catches in this type trap totalled 1241 and 1564, as compared to 3675 and 3724 adults collected in the survey type trap in 1977-78 (table 1). The same situation prevailed in Riverside. Annual catches of 212 and 219 *C. exsul* adults were obtained in 1975-76, as compared to 3100 and 2143 adults in 1977-78.

The smaller catches in the earlier years indicated that either the hand collection method was inferior or the species had not become too well established.

At Olive, 64% of the *C. exsul* adults were collected during July and August, these generally being the hottest months of the year. During the two years first and last adults were collected on May 12, 1978 and on November 26, 1977.

At Riverside, larger than normal catches of *C. exsul* adults were obtained when daily temperatures exceeded 100° F. and when temperatures between 7 and 10 p.m. remained between 70 and 75° F. Very few or no adults were recovered when evening temperatures dropped to 60° F. or below. The combined monthly totals show that adult catches were greater in July-August. Of the total catch 59% were collected in this period. Beetles were

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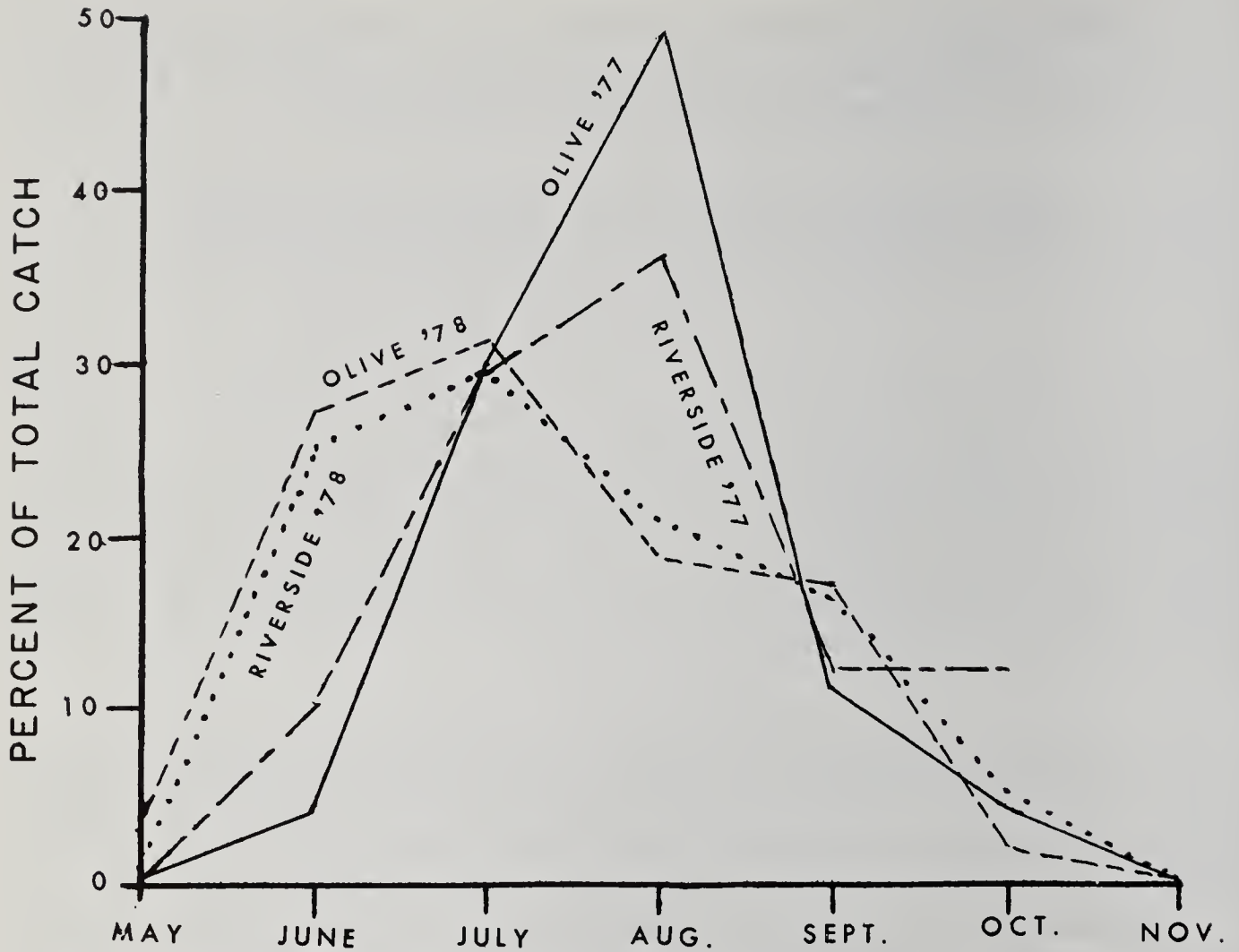


Fig. 1. Monthly catches of *Conoderus exsul* adults at black light. Riverside and Olive, California. 1977-78.

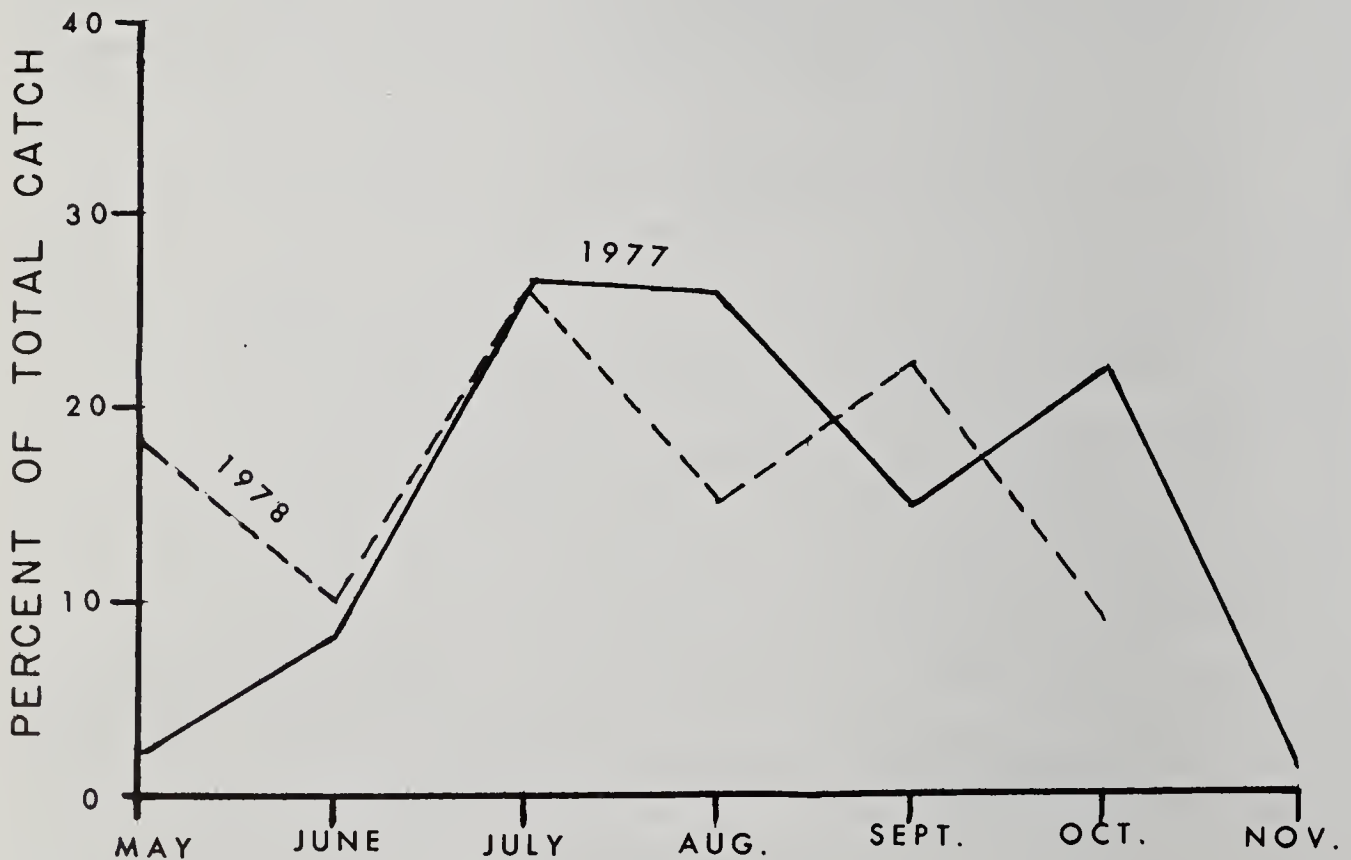


Fig. 2. Monthly catches of *Conoderus falli* adults at black light. Riverside, California. 1977-78.

TABLE 1. Monthly and yearly totals of *Conoderus exsul* and *C. falli* adults collected in black light traps, Riverside and Olive, CA.*C. exsul*: Riverside

	May	June	July	Aug.	Sept.	Oct.	Nov.	Total
1977	13	313	899	1124	370	381	0	3100
1978	67	529	625	459	341	120	2	2143
Total:	80	842	1524	1583	711	501	2	5243

C. exsul: Olive

1977	3	179	1106	1788	409	167	23	3675
1978	117	997	1158	700	649	97	6	3724
Total:	120	1176	2264	2488	1058	264	29	7399

C. falli: Riverside

1977	54	196	588	602	339	510	6	2295
1978	413	234	588	334	507	214	0	2290
Total:	467	430	1176	936	846	724	6	4585

collected as early as May 8, 1978 and as late as November 27, 1977. The percent of total monthly catch each year at the two locations are shown graphically in Fig. 1.

It is of interest that no *C. falli* adults were trapped at the Olive location despite its presence in other areas of Orange county. At Riverside hand collections of *C. falli* adults at a black light in the 4 year period 1973-76 involved only 1,579 beetles. The regulation survey type trap used in 1977-78 collected a total of 2295 and 2290 adults, in numbers sufficient to indicate that food, soil, and climate were favorable for larval development (Table 1, Fig. 2). In these studies beetle activity commenced as early as April 30 in 1976 and terminated as late as October 28 in 1978. The majority (65%) of the beetles were trapped in the months July to September.

Other elaterids common in the trapping area were also collected but in lesser numbers. These were *Aeolus livens* (LeC.) and *Melanotus longulus* (LeC.).

LITERATURE CITED

- STONE, M. W. 1975. Distribution of four introduced *Conoderus* species in California (Elateridae). *Coleopt. Bull.* 29(3):163-166.
 _____ 1976a. Notes on the biology of the introduced Elaterid *Conoderus exsul* (Sharp). *Pan-Pac. Entomol.* 52(4):304-310.
 _____ 1976b. The southern potato wireworm in California (Coleoptera: Elateridae). *Coleopt. Bull.* 30(4):361-364.